

AMENDMENT TO THE CLAIMS:

Please cancel claims 1-8 and 21-24, without prejudice, and please add new claims 25-36, as shown below.

This listing of claims will replace all prior versions and listings of claims in the Application:

Claims 1-8 (canceled)

Claim 9 (withdrawn): A computer program product embodied on a computer-readable medium and comprising code that, when executed, causes a computer to perform the following:

(a) carrying out a heat treatment of a substrate, on which a resist pattern is formed, in a first heat treatment temperature in a first treatment period; and

(b) changing said first heat treatment temperature to a second heat treatment temperature during said heat treatment such that a variation of dimensions of said resist pattern in said heat treatment reaches a desirable variation in a second treatment period.

Claim 10 (withdrawn): The computer program product according to claim 9, wherein said (b) comprises:

(b1) calculating said second heat treatment temperature based on said desirable variation and said variation in said first heat treatment temperature; and

(b2) carrying out said heat treatment of said substrate in said second heat treatment temperature in said second treatment period.

Claim 11 (withdrawn): The computer program product according to claim 10, wherein said

(b1) comprises:

(b11) calculating said variation based on a substantial temperature of said substrate, said first treatment period and a temperature dependence data which shows a relation between heat treatment temperatures and variation rates per unit of time of dimensions of said resist pattern.

Claim 12 (withdrawn): The computer program product according to claim 11, wherein said (b1) comprises:

(b12) calculating said second heat treatment temperature based on a required variation which is a difference between said desirable variation and said variation in said first heat treatment temperature, said temperature dependence data and said second treatment period.

Claim 13 (withdrawn): The computer program product according to claim 9, wherein said (a) comprises:

(a1) carrying out said heat treatment in said first heat treatment temperature in each of a plurality of areas in said substrate in said first treatment period independently,

said (b) comprises:

(b3) changing said first heat treatment temperature to said second heat treatment temperature during said heat treatment such that said variation reaches said desirable variation in said second treatment period in said each of a plurality of areas.

Claim 14 (withdrawn): The computer program product according to claim 13, wherein said (b3) comprises:

(b31) calculating said second heat treatment temperature based on said desirable variation and said variation in said first heat treatment temperature in said each of a plurality of areas; and

(b32) carrying out said heat treatment of said substrate at said second heat treatment temperature in said second treatment period in said each of a plurality of areas.

Claim 15 (withdrawn): The computer program product according to claim 14, wherein said (b31) comprises:

(b311) calculating said variation based on a substantial temperature of said substrate, said first treatment period and a temperature dependence data which shows a relation between heat treatment temperatures and variation rates per unit of time of dimensions of said resist pattern in said each of a plurality of said areas.

Claim 16 (withdrawn): The computer program product according to claim 15, wherein said (b31) comprises:

(b312) calculating said second heat treatment temperature based on a required variation which is a difference between said desirable variation and said variation in said first heat treatment temperature, said temperature dependence data and said second treatment period in said each of a plurality of said areas.

Claim 17 (withdrawn): A heat treatment apparatus comprising:

a plurality of heat treatment sections each of which separately carries out a heat treatment of corresponding one of a plurality of areas in a substrate having a resist pattern;

a plurality of temperature sensors each of which detects a temperature of corresponding one of said plurality of heat treatment sections; and

a control section which controls each of said plurality of heat treatment sections based on corresponding one of each of detection results,

wherein said control section calculates a variation of dimensions of said resist pattern in said heat treatment in a first heat treatment temperature in a first treatment period based on said first heat treatment temperature, and changes said first heat treatment temperature to a second heat treatment temperature such that said variation reaches a desirable variation in said each of a plurality of areas in a second treatment period, during said heat treatment.

Claim 18 (withdrawn): The heat treatment apparatus according to claim 17, wherein said control section calculates said second heat treatment temperature based on said desirable variation and said variation in said first heat treatment temperature in said first treatment period in said each of a plurality of said areas, and carries out said heat treatment of said substrate in said second heat treatment temperature in said second treatment period in said each of a plurality of said areas.

Claim 19 (withdrawn): The heat treatment apparatus according to claim 18, wherein said control section calculates said variation based on a temperature at a place beside said substrate, said first treatment period and a temperature dependence data which shows a relation between heat treatment temperatures and variation rates per unit of time of dimensions of said resist pattern in said each of a plurality of said areas.

Claim 20 (withdrawn): The heat treatment apparatus according to claim 19, wherein said control section calculates said second heat treatment temperature based on a required variation which is a difference between said desirable variation and said variation in said first heat treatment temperature, said temperature dependence data and said second treatment period in said each of a plurality of said areas.

Claim 21-24 (canceled)

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Claim 25 (new): A method of forming a resist pattern comprising the steps of:

performing a first heat treatment of a substrate during a first time period using a first treatment temperature;

collecting temperature data during said first time period;

calculating from said collected temperature data, temperature variance dependency data, and a predetermined length of a second time period for a second treatment temperature; and

performing a second heat treatment of said substrate at said second treatment temperature.

Claim 26 (new): The method of claim 25, wherein said collected temperature data and said temperature variance dependency data is stored in a computer memory.

Claim 27 (new): The forming method according to claim 25, wherein said calculation is based upon a relationship between heat treatment temperatures and variation rates per unit of time of dimensions of said resist pattern.

Claim 28 (new): The method of claim 25, wherein said temperature data is collected using a plurality of temperature sensors.

Claim 29 (new): The method of claim 25, wherein said first and second heat treatments are performed using a plurality of heater blocks.

Claim 30 (new): The method of claim 28, wherein each of said temperature sensors is independently controlled by a computer.

Claim 31 (new): The method of claim 29, wherein said heater blocks are independently controlled by a computer.

Claim 32 (new): A method of manufacturing a semiconductor device comprising the steps of:

forming a resist pattern on a substrate on which a film is formed;

performing a first heat treatment of a substrate during a first time period using a first treatment temperature;

collecting temperature data during said first time period;

calculating from said collected temperature data, temperature variance dependency data, and a predetermined length of a second time period for a second treatment temperature;

performing a second heat treatment of said substrate at said second treatment temperature;

etching said film on said substrate; and

removing said resist pattern from said substrate.

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